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ABSTRACT

To determine how parent behaviors affect children's anxiety and coping responses, and to assess how children's behaviors affect parental functioning in stressful medical settings, 50 children between 4 and 10 years of age, who were seen as outpatients in the Pediatric Clinics at Shands Teaching Hospital at the Unviersity of Florida, were videotaped along with their mothers while waiting for the physician in clinic examining rooms. An observational scale of parent/child interaction was used to rate the 5- to 10-minute videotapes. Four classes of child behaviors were observed: attachment, distress, exploring, and social affiliation. Parenting behavior categories observed were informing, restraining, distracting, reassuring, ignoring, and agitation. Results supported the prediction that children in pediatric settings are affected adversely by maternal anxiety. Mothers rated as agitated during the waiting period ignored their children more, and their children showed more distress and engaged in less information seeking. In addition, it was found that mothers who were not highly agitated were more likely to interact with their children and to use distraction to keep them from becoming distressed. Results were interpreted as furthering scientific understanding of the development of fears and coping competencies in children. (BJD)

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MOTHER - CHILD INTERACTIONS DURING MEDICAL EXAMINATIONS

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INTRODUCTION

Visiting the pediatrician is often a stressful experience for both children and their parents, which may contribute to the formation of dysfunctional health care attitudes as well as behavioral disturbances in the child. While children's reactions to hospitalization (King & Ziegler, 1981), chronic illness (Surwit, Feinglos & Scovern, 1983), outpatient dental treatment (Venham, Bengston & Cipes, 1978), and other medical events have been studied fairly extensively, there have been relatively few studies examining children's responses to the commonly experienced pediatric clinic outpatient visit. Programs designed to prepare children for experiences of this sort are currently proliferating in pediatric settings (Peterson & Ridley-Johnson, 1980).

One promising approach to preparing children for medical procedures is to provide parents with training enabling them to fill this function. Unfortunately, research on parent-focused programs has thus far failed to investigate actual parenting behaviors in the medical setting. Instead, studies have relied on paper-and-pencil measures of anxiety (Hawley, et al., 1974), child-rearing practices (Zabin & Melamed, 1980), and other variables. These studies have provided correlational data relating parental variables to children's adjustment. The research I will describe today has attempted to go beyond these previous studies by utilizing observational measurement of actual parenting behaviors in a stressful medical situation, and analyzing interactional patterns in order to get some idea both of how parent behaviors affect children's anxiety and coping responses, and how children's behaviors affect parental functioning in this situation.

Theoretical models for conceptualizing parent influences on children's behavior in stressful situations include the Emotional Contagion Hypothesis and the Crisis Parenting Hypothesis. The Emotional Contagion Hypothesis (Escalona, 1953)

states that mothers communicate their anxiety to their children by primarily non-verbal means. This hypothesis has been broadly supported in correlational research (Bailey, Talbot & Taylor, 1973). Since we were interested in what the parent actually does with the child in the stressful medical situation, we formulated the Crisis Parenting Hypothesis, which emphasizes the increased importance of parenting when young children face stressors. Thus, effective parenting during a stressful situation may be of substantial benefit to the child, while ineffective parenting may exacerbate the negative effects of stress. Parental anxiety may be important due to its potentially disorganizing influence on parental functioning.

METHOD

Our research attempts to deal with some of these questions by, first, developing an observational instrument to measure dyadic interaction between parent and child in stressful medical situations, and second, by obtaining normative data on these interactions. These normative data provide an initial base upon which to begin to identify families at-risk for dysfunctional interaction in the face of acute illness in the child, as well as for analyzing interactive processes mediating children's responses to stress.

50 children between four and 10 years of age who were seen as outpatients in the Pediatric Clinics at Shands Teaching Hospital at the University of Florida were videotaped along with their mothers while waiting for the physician in clinic examining rooms. These children were referred to Shands for specialized diagnostic or therapeutic attention or postsurgical follow up. Children with severe chronic disabilities were excluded from this study. Table One shows the distribution of subjects by age, sex, previous medical experience, and type and severity of disease. As you can see, the sample was well balanced with respect to age and sex, but most of the children had had some type of previous medical experience.

Prior to entering the examining room, self-report measures of anxiety were administered to both mothers and children. Background information was obtained from mothers by means of a short structured interview form, including demographic data and details about the child's previous medical experiences.

An observational scale of parent-child interaction was used to rate the videotapes made while subjects were awaiting the examining physicians. We constructed the Dyadic Prestressor Interaction Scale (DPIS) after review of related literature and extensive narrative-descriptive clinic observation (Bush, 1983). Four classes of child behaviors and six of parent behaviors were selected, and four specific behaviors operationally defined within each class. Child behavior categories were adapted from Bretherton & Ainsworth's (1974) functional systems of behavior in a strange situation. The child categories are attachment, distress, exploring, and social-affiliative behavior. Parent behaviors correspond to dimensions of parent behavior indicated by past research as relevant to children's adjustment to stressful medical procedures. The parenting behavior categories are informing, restraining, distracting, reassuring, ignoring, and agitation. Specific constituent behaviors were defined according to criteria of face validity, observed occurance in the clinics during narrative-descriptive observation, and inclusion of verbal and motoric behaviors across the age span represented in the sample.

Ratings were made on all dyads for whom at least five minutes of uninterrupted videotaped interaction was obtained while waiting for the physician, up to a maximum of 10 minutes. Instantaneous scan ratings (Altmann, 1974) were made every five seconds to ascertain which if any of the 10 behavior classes were being engaged in at that moment.

Table Two presents interobserver agreement reliability coefficients, generated by comparing ratings made by three independent raters on each of the 50 videotapes. Winer's (1962) repeated measures ANOVA method was used to calculate these coefficients. The categories are all highly reliable.

RESULTS & DISCUSSION

Predicted patterns of mother-child interaction were hypothesized, based on the theoretical models I have presented. From the Emotional Contagion Hypothesis, it was predicted that mothers who showed more agitation would have children who showed more signs of distress, and that younger children would show this effect more strongly - emotional contagion from mother should become relatively less dominant as a determinant of older children's anxiety. From the Crisis Parenting hypothesis, it was predicted that mothers who showed more agitation would show more disorganization of parenting and that this would negatively affect the children. Thus it was expected that mothers who showed more agitation and used more ignoring or distraction would have children who did not use much exploration and who were high in distress.

The four child behavior categories were found to measure four reasonably independent functional systems. Distress was negatively related ($r = -.43$, $p < .01$) to socializing. Children high in distress were found to emit low rates of social-affiliative responses. It was also found that distress was inversely associated with exploration ($r = -.78$, $p < .05$). Children showing frequent distress behaviors spent less time exploring the situation.

Significant within-parent correlations mostly involved ignoring behavior. Ignoring was defined as mother occupying herself in such a way that the child would have to interrupt in order to get her attention; that is, ignoring was not merely the absence of other maternal behavior categories. Ignoring was negatively correlated with each of the four parent behavior categories with which it could not co-occur simultaneously. Ignoring and agitation, which could co-occur, were positively correlated ($r = .31$, $p < .05$). In addition, more agitated mothers provided less information to their children ($r = -.28$, $p < .05$).

As you can see in Table Three, attachment in children was associated with parental reassuring ($r = .56$, $p < .001$). This appeared to frequently represent reciprocal interactions: though free to vary independently, behaviors scored as attachment (e.g., reaching for mother) were often simultaneously reciprocated by parental behavior scored as reassuring (e.g. picking the child up), and vice-versa. Other simultaneous reciprocal interaction patterns were evidenced by strong correlations between maternal distracting and child social-affiliative behaviors ($r = .77$, $p < .001$) and between maternal information provision and exploration ($r = .57$, $p < .001$). Mothers who used distraction had children who were likely to engage in more nonmedical play or conversation, and mothers provided more information to children who spent more time seeking information.

As predicted by the Emotional Contagion hypothesis, distress of the child was positively associated with maternal agitation ($r = .32$, $p < .05$), as well as with high rates of maternal reassuring ($r = .39$, $p < .01$). On the other hand, low distress in the child was assoicated with frequent maternal use of distraction ($r = -.31$, $p < .05$). While it might be suspected that parental agitation elicited children's distress whereas parental reassurance was responsive to it and distraction prevented it, these correlational data are inconclusive as to causality, much less causal direction. We are currently engaged in further analysis of these data, using sequential analysis techniques (Gottman, 1979) by means of which we can evaluate whether temporal patterns in these interactions are consistent with some of our causal inferences.

The remaining parent-child correlations consisted of tendencies for parental ignoring to be associated with less child exploring ($r = -.30$, $p < .05$) and with less child socializing ($r = -.46$, $p < .001$).

Patterns of relationship between combinations of parent behaviors and combinations of child behaviors were examined by means of canonical correlation analysis. In addition, interactions of child age with maternal behaviors were examined in order to evaluate whether age mediated their relationship with child behaviors.

All of the four possible canonical functions generated by this procedure were statistically significant. Each function consists of a set of regression weights assigned to the six parental and the four child behaviors, along with a multiple correlation coefficient and significance level describing the association between the multivariate canonical factors. As you can see in Table Four, the regression weights are presented as standardized coefficients, and thus may be compared in order to evaluate which behaviors primarily constitute each canonical factor. The first canonical function yielded an R^2 of .67 ($p < .0001$). Mothers who used much distracting and little reassurance had children who engaged in high levels of sociable-affiliative behavior.

The second canonical function, shown in the Table Five, was orthogonal to the first. It showed that mothers who employed less reassurance and provided more information had children who spent more time exploring the situation ($R^2 = .48$, $p < .0001$). This effect was age-related. Even though the overall frequencies of both exploring and informing behaviors were unrelated to child's age, these variables were more strongly associated among younger than older children. Older children were apparently more able to explore the stressful situation regardless of mother's acting as an active source of information.

The third canonical function, shown in Table Six, showed that parents who used a lot of reassurance had children who showed a lot of distress. These children also showed high levels of exploration as well as engaging in frequent social-affiliative and attachment behaviors ($R^2 = .43$, $p < .0001$).

The last significant canonical function, shown in the Table Seven, supported the predication drawn from the Crisis Parenting hypothesis. It showed that parents who were highly agitated and who ignored their children a great deal or tended to make use of distraction had children who showed little attachment and who were high in distress ($R^2 = .26$, $p < .01$). A significant age interaction indicated that

parents tended to use distraction more with younger children when they showed distress. Also, maternal ignoring was more likely to be associated with distress in younger than in older children.

In summary, the results of our investigation supported the prediction that children in pediatric settings are affected, apparently adversely, by maternal anxiety. Mothers rated as agitated during the pre-exam waiting period ignored their children more, and their children showed more distress and engaged in less information-seeking. These mothers tended to provide little information, although they did provide reassurance when the child acted distressed -especially younger children. Could it be, then, that these mothers were inadvertently reinforcing their children to cope with medical stressors by acting distressed? On the positive side, we found that mothers who were not highly agitated were more likely to interact with their children and to use distraction to keep them from becoming distressed. The effectiveness of distraction and information provision were found to depend upon the interactive context in which they occurred, that is, upon what else mother was doing during the same time period.

These results are interesting in several respects, including increasing scientific understanding of the development of fears and coping competencies in children; how interpersonal interactions can modulate the effects of stressors and enhance or impair coping efforts; and developing an observational instrument and quantitative methods for analyzing dyadic interaction prior to a stressful event. After sequential analysis to examine some of our causal interpretations of these correlational data, some of the next steps will include replication with a different population (which is now being carried out at Virginia Commonwealth University), evaluation of the effects of parent-focused interventions on observed mother-child interactions, and investigation of relationships between interaction patterns and both immediate and longitudinal outcome variables of interest.

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Table 1

Sample Characteristics: Demographic and Medical Status

	4-6 Years	6-8 Years	8-10 Years
Age	18	16	16

	Male	Female
Sex	30	20

		Experience	No Experience
Previous Medical Experience	Surgery	34	16
	Hospitalization	40	10
	Shands Clinics	42	8
	Other Outpatient	38	12

	Gastroenterology	Urology	Elective Surgery	Infectious Diseases
Clinic Attended	1	16	23	10

	Least Severe							Most Severe		
	1	2	3	4	5	6	7	8	9	10
Severity of Diagnosis	0	7	9	7	4	5	5	5	1	1

Table 2

DYADIC PRESTRESSOR INTERACTION SCALE

INTER-RATER RELIABILITY OF BEHAVIOR CATEGORIES

N=50

CHILD BEHAVIORS	ATTACHMENT	.94
	DISTRESS	.80
	EXPLORATION	.92
	SOCIALIZING	.94
PARENT BEHAVIORS	IGNORING	.97
	REASSURING	.96
	DISTRACTING	.96
	RESTRAINING	.52*
	INFORMING	.96
	AGITATION	.98

*SCORED DICHOTOMOUSLY FOR PRESENCE OR ABSENCE IN ENTIRE SESSION.

Table 3

Correlations Between DPIS Parent and Child Behavior Categories

Parent Categories	Child Categories: Attachment	Distress	Exploration	Social-Affiliative
Ignoring	-.17	.24	-.30*	-.46***
Reassuring	.56***	.39**	-.21	-.17
Distracting	-.06	-.31*	-.05	.77***
Restraining	-.21	-.20	.20	.21
Informing	-.12	-.05	.57***	-.11
Agitation	-.26	.32*	-.02	-.07

*$p < .05$

**$p < .01$

***$p < .001$

Table 4

First Canonical Function: Relationships Between Parent and Child Behaviors (Standardized Coefficients)

Parent Behaviors			Child Behaviors	
Agitation	-.10		Attachment	-.12
Reassurance	-.46	Canonical Correlation = .82	Exploration	-.01
Informing	-.22		Distress	-.23
Ignoring	-.26	R^2 = .67	Social-Affiliative	.86
Distracting	.72	p < .001		
Restraining	.03			

Table 5

Second Canonical Function: Relationships Between Parent and Child Behaviors (Standardized Coefficients)

Parent Behaviors			Child Behaviors	
Agitation	.27		Attachment	-.30
Reassurance	-.55	Canonical Correlation = .69	Exploration	.88
Informing	.68		Distress	.01
Ignoring	-.48	R^2 = .48	Social-Affiliative	-.09
Distracting	-.39	p < .001		
Restraining	.01			

Table 6

Third Canonical Function: Relationships Between Parent and Child Behaviors (Standardized Coefficients)

Parent Behaviors			Child Behaviors	
Agitation	.36		Attachment	.81
Reassurance	.75	Canonical Correlation = .66	Exploration	.67
Informing	.29		Distress	.73
Ignoring	-.26	R^2 = .43	Social-Affiliative	.63
Distracting	.13	$p < .001$		
Restraining	.38			

Table 7

Fourth Canonical Function: Relationships Between Parent and Child Behaviors (Standardized Coefficients)

Parent Behaviors			Child Behaviors	
Agitation	.89		Attachment	-.58
Reassurance	.29	Canonical Correlation = .51	Exploration	-.05
Informing	.35		Distress	.90
Ignoring	.48	R^2 = .26	Social-Affiliative	.41
Distracting	.61	$p < .01$		
Restraining	-.21			